California Air Resources Board

Work Program for U.S. EPA 105 Grant

Fiscal Year 2020
Air Resources Board

Program Overview

INTRODUCTION

The California Air Resources Board (CARB) is the State agency responsible for protecting public health and the environment from the harmful effects of air pollution. CARB consists 12 Governor-appointed and four Legislature-appointed Board members and about 1,500 staff in thirteen divisions.

CARB oversees all air pollution control efforts in California, including the activities of 35 independent local air districts. State law vests CARB with direct authority to regulate pollution from motor vehicles, fuels, and consumer products. Primary responsibility for controlling pollution from business and industry lies with the local air districts. The federal government retains the exclusive authority to regulate interstate trucks registered outside California, certain new farm and construction equipment, new locomotives, ships, and aircraft. CARB works in cooperation with the districts and the U.S. Environmental Protection Agency (U.S. EPA) on strategies to attain State and federal ambient air quality standards and reduce air toxics emissions. CARB is also the lead agency for implementation of AB 32, the California Global Warming Solutions Act of 2006.

The scientific backbone of California's air quality programs is CARB's research and technical work on the causes, effects, and methods for control of air pollution. Extensive health effects studies assess whether CARB's current programs adequately protect the health of all Californians and enable the identification of pollutants of most concern. California's air monitoring network, emission inventory, and atmospheric modeling capability are the most extensive in the nation. This scientific foundation provides the information needed to pursue effective strategies to cut air emissions and reduce health impacts from air pollution.

CARB's regulatory and other programs continue to set the standard for innovative and effective air pollution mitigation in California. However, these programs can only achieve their projected benefits if they are properly and consistently implemented. CARB's enforcement program incorporates both a compliance foundation, through industry training programs and compliance assistance materials that provide regulated industries with the opportunity to learn and understand how to comply with regulations, and an enforcement arm that brings violators to justice, effectively creating an incentive to comply.

Outreach and cooperative efforts with community, industry, academic, and governmental stakeholders are critical to achieving CARB's goals: community members help identify priorities and address local concerns; businesses assist in identifying feasible and cost-effective controls with reasonable implementation timeframes; and academic institutions provide the scientific information that support the programs. Other

government agencies cooperate on issues that fall under their jurisdiction. These partnerships help CARB meet California's clean air quality goals.

California residents, businesses, and agencies have made tremendous progress in improving air quality. Twenty five years ago, the entire South Coast region violated the 75 parts per billion 8-hour ozone standard. Today, ozone concentrations have declined 45 percent, and 40 percent of the population lives in communities that meet the standard. Health risks from air toxics also continue to decline. Diesel particulate matter, which accounts for over two thirds of the total known cancer risk in the State, has dropped nearly 70 percent since 1990. Some of the largest reductions occurred at monitors in disadvantaged communities, which saw decreases that were three times greater than monitors in non-environmental justice communities. The decrease in health risk from air toxics such as benzene and lead has been equally dramatic. However, despite this progress, about 93 percent of Californians live in areas designated nonattainment for federal ozone and particulate matter air quality standards.

U.S. EPA continues to strengthen national ambient air quality standards for fine particulate matter (PM2.5), ozone, nitrogen dioxide, sulfur dioxide, and lead. These standards are more health protective and will require additional areas of the state to develop plans and programs to reduce emissions. These new nonattainment areas will need CARB technical assistance to monitor air quality, model future emissions, develop control programs, and ensure compliance of those new programs. In addition, CARB's current motor vehicle, fuels and consumer products programs will need to find new ways to further reduce emissions to ensure that all areas of California can meet these new federal requirements.

CARB programs reflect a commitment to clean air and a healthier future for all Californians. Specific actions to achieve priorities are described in State Implementation Plans and other documents such as the Diesel Risk Reduction Plan, Sustainable Freight Action Plan, Emission Reduction Plan for Ports and International Freight Transport, the Environmental Justice Action Plan, Short Lived Climate Pollutant Plan, and the Climate Change Scoping Plan.

MISSION STATEMENT

To promote and protect the public health, welfare, and ecological resources through the effective and efficient reduction of air pollutants while recognizing and considering the effects on the economy of the State.

AGENCY-WIDE ENVIRONMENTAL MANAGEMENT SYSTEM

CARB in cooperation with the Boards, Departments, and Offices under the umbrella of the California Environmental Protection Agency (Cal/EPA) follows an agency-wide Environmental Management System (EMS) which integrates green practices in the day-to-day efforts of the organization including environmentally preferred and cooperative purchasing, energy and materials efficiencies, green construction practices, recycling

management, and reduction in environmental impacts attributable to employee's job-related travel, including commuting to and from work.

Please see Attachment A for details of the Policy.

STRATEGIC GOALS

- Air that is healthy to breathe, sustains and improves our ecosystems, and preserves natural and cultural resources.
- Communities that are free from unacceptable human health and ecological risks due to exposure from hazardous substances and other potential harmful agents.
- Reduce or eliminate the disproportionate impacts of pollution on low-income and minority populations.
- Ensure the efficient use of natural resources.
- Continuous improvement and application of science and technology.

STRATEGIC OBJECTIVES

Air that is healthy to breathe, sustains and improves our ecosystems, and preserves natural and cultural resources.

- Meet the federal and State standards for all criteria pollutants by the required deadlines.
- Maintain air quality in the areas already meeting health standards.
- Identify and reduce emissions and public health risk of non-criteria toxic pollutants.
- Reduce air pollution loading to land and water.
- Reduce emissions of greenhouse gases.
- Reduce ozone depleting gases.
- Reduce the public health risk of indoor air pollution.
- Reduce regional haze to improve visibility.

PRIMARY WORK STATEMENT

Strategic Plan Goal: Taking Action on Climate Change and Improving Air Quality (Essential Element 1)

CARB is developing and implementing new strategies to fulfill the Strategic Plan Goal on a local, regional, statewide, and global level by:

<u>Activities that Meet Strategic Plan Objective 1.1: Address Climate Change (Essential Element 2).</u>

- **Adopting and implementing measures to reduce greenhouse gas emissions.**

CARB is the lead agency for the implementation of the California Global Warming Solutions Act of 2006 (AB 32). In this capacity, CARB has developed greenhouse gas emission inventories by economic sector, required large sources of greenhouse gas emissions to report their emissions, set a 2020 target for emission reductions, adopted nine Discrete Early Action measures to obtain near-term reductions, adopted a Scoping Plan that lays out California's overall strategy to reduce greenhouse gases, and begun adopting the specific emission reduction measures identified in the Scoping Plan. The Scoping Plan covers a broad and unprecedented range of emission sources such as transportation, electricity generation and other large sources, residential and commercial users, agriculture and forests, landfills, and other sectors. CARB is currently implementing numerous regulations to reduce greenhouse gases including reducing methane emissions from landfills, addressing refrigerant leaks, reducing the carbon intensity of transportation fuels through the Low Carbon Fuel Standard, requiring cleaner cars via the Advanced Clean Car regulation, reducing passenger vehicle use through coordinated transportation and land use planning, and capping greenhouse gas emissions statewide through the cap-and-trade regulation.

CARB is also part of a multi-agency Climate Action Team (CAT) that identifies the actions California should take to adapt to the unavoidable consequences of climate change and reduce emissions dramatically by 2050 to avoid catastrophic climate change in the long-term. Under the leadership of the California Natural Resources Agency, CARB together with the other CAT agencies is also helping to finalize California's first comprehensive climate adaptation strategy to reduce our risks to future climate impacts in a coordinated and cost-effective approach.

Activities that Meet Strategic Plan Objective 1.2: Improve Air Quality (Essential Element 2).

Federal and State Air Quality Planning and Implementation

- **Meeting obligations under the federal Clean Air Act.**

  CARB works with local and federal partners to develop State Implementation Plans for ozone and particulate matter in California non-attainment areas in response to U. S. EPA's promulgation of the new national eight-hour ozone standard and the fine particulate matter (PM2.5) standards.

- **Adopting and implementing new strategies to cut ozone, particulate matter, and air toxics from all sources.**

  CARB develops and implements technology-advancing, cost-effective emission reduction measures for all sources under its authority including cars and trucks, off-road equipment, recreational vehicles, fuels and fueling operations and consumer products. Reducing particulate matter from diesel engines is the

highest priority for the air toxics program. To further cut personal exposure, CARB examines ways to address indoor air pollution.

- **Assessing and improving air quality in the California-Mexico border region.**

  CARB works cooperatively with U.S. and Mexican environmental agencies to build the foundation for successful air quality management strategies for the California- Mexico border region. CARB continues to support an air monitoring network located in Tijuana, Tecate, and Mexicali, Mexico and Calexico, California. CARB provides training, laboratory analysis, and certification of standards in support of the Baja network.

  Within Imperial County, CARB and the Imperial County Air Pollution Control District (ICAPCD) operate a network of air quality monitoring stations, including an air monitoring station in Calexico, California. The Calexico station includes a data acquisition system that is used to retrieve and display real-time air quality information on an Imperial Valley-specific website. With the use of air quality and meteorological models, forecasts of ozone and particulate matter (PM) are generated, which provide alerts to Imperial County residents when ozone or PM concentrations reach – or are expected to reach – unhealthy levels.

  In addition to the PM2.5 monitors and other instrumentation installed at the Calexico station, CARB will install instrumentation to obtain real-time PM2.5 chemical speciation data. These data are expected to provide valuable information on the types of emission sources affecting Calexico and other areas of the Imperial Valley.

  To assess the impact of cross-border emissions, consistent and reliable data are needed on both sides of the California-Mexico border. To meet this need in the Calexico-Mexicali area, CARB will operate two (2) monitoring stations in the Mexicali area (University Autónoma de Benito Juárez [UABC] and Colegio de Bachilleres [COBACH]). This PM2.5 monitoring effort constitutes the second phase of a Mexicali monitoring study first begun in 2015.

  CARB is working with the ICAPCD to identify disturbed soil surfaces within the Imperial Valley that contribute to windblown dust during high wind events. To reduce high PM10 concentrations impacting Imperial Valley communities during high winds, CARB will install a 360-degree, time-lapse camera on a hilltop or communication tower within or adjacent to the southwestern desert portion of Imperial Valley.

- **Imperial & San Diego County Air Basin**

  CARB is working closely with U.S. and Mexico environmental agencies to build a successful foundation for understanding air quality impacts along the California- Mexico Border Region. Air quality analysis and modeling has shown that Imperial County air quality is adversely impacted by Mexicali, Mexico. To accurately reflect the impact, a complete accurate understanding of the sources and emissions are needed. While we have a good understanding of Imperial

County sources and emissions, our current understanding of Mexicali emissions is limited, especially mobile and area wide sources. CARB will work with our federal and international counterparts to improve the emission estimates in the Northern Mexico region.

- **Salton Sea Soil Emissivity Testing**

  CARB is working closely with Imperial Irrigation District (IID) and Imperial County Air Pollution Control District (ICAPCD) to research soil emissivity characteristics at the Salton Sea and develop windblown dust control measures for application to exposed playa as the level of the Sea declines and other emissive lands in the region. To augment playa testing being performed by IID's air quality consultant team, ICAPCD will be equipped and trained to use the Pi-SWERL portable wind tunnel to test soil emissivity on non-playa lands, provide backup testing capability to IID, and receive training on IID's emissivity data processing and website display technology. ICAPCD will use the training and data collected to develop new protocols for assessing soil stability and regulatory amendments to more effectively control windblown dust on and near Salton Sea playa.

  CARB plans to convene a committee composed of officials from South Coast AQMD, the Imperial County APCD, and U.S. EPA to discuss Salton Sea air quality issues.

- **Ozone Monitoring Support**

  EPA found that the ozone-only monitoring stations within CARB's network operate using internal zero/span equipped monitors. The method of conducting precision checks at these sites is potentially inconsistent with EPA regulatory requirements for precision and is not how CARB performs precision checks at monitoring stations with multiple pollutants. There are eighteen affected CARB monitoring sites and fifteen affected CARB Primary Quality Assurance Organization district sites.

  Inquiries have been made seeking options and costs for identifying a suitable programmable O3 generator/calibrator with a corresponding zero-air supply to deploy at approximately eighteen affected CARB monitoring sites. The process of identifying an appropriate calibration system, authoring specifications, securing funding and procurement would optimistically take nine to twelve months. Upon receiving the systems, acceptance and deployment would take an additional three to six months.

  Upon installation of the calibration systems at the affected sites, calibration reports will be generated documenting the measured output of the respective systems and establishing a path of traceability for the calibrators as tertiary standards. These reports will subsequently be compiled and forwarded to the U.S. EPA.

Risk Reduction from Air Toxics

- **Adopting and implementing measures to reduce the risk from exposure to particulate matter from diesel engines 85 percent by 2020**.

  CARB reduces particulate matter from diesel engines through programs that require newer cleaner engines, engine retrofits and cleaner fuels, as well as financial incentives programs to accelerate the clean-up of older, dirtier engines. As part of these programs, CARB has developed regulations that will reduce PM emissions from nearly all on- and off-road heavy duty diesel vehicles and engines that operate in California.

- **Freight Transport Related Programs and Strategies to Reduce Emissions.**

  CARB has adopted and is currently enforcing numerous measures identified in the 2006 Emission Reduction Plan for Ports and Goods Movement. The measures address all significant emission sources associated with the movement of international and domestic freight, including trucks, transport refrigeration units, locomotives, ships, harbor craft, cargo handling equipment, and aircraft. CARB also continues to work closely with the local air pollution control districts to provide incentives for cleaner freight technology through the Carl Moyer Program and the $1 billion Proposition 1B Goods Movement Emission Reduction Program. These measures and incentives have been incorporated into California's 8-hour ozone and PM2.5 SIPs for regions where additional reductions are needed. CARB also conducts health risk assessments for major seaports and rail yards in California, works with ports, railroads, and air districts to reduce localized health risk, improves and updates emission inventories, and coordinates with federal agencies to advocate for more effective national and international standards. In addition, CARB is working with stakeholders to identify the advanced technologies needed to transform California freight transport to a sustainable zero- or near-zero emission system over the next several decades.

Mobile Source Technology Advancement

- **Promoting the development, commercialization, and use of zero- and near-zero emission technologies.**

  CARB is taking the initial steps in the development of a hydrogen transportation system that is a bridge to a cleaner, more secure, and more sustainable transportation and energy future. CARB recognizes that the development, commercialization, and the use of zero- and near-zero emission technologies is critical for achieving and maintaining federal and State air quality standards.

- **Demonstrating the viability and promoting the commercialization of fuel cells in many applications.**

  CARB is a member of the California Fuel Cell Partnership and the California Stationary Fuel Cell Collaborative. The California Fuel Cell Partnership is a

collaboration of automotive manufacturers, fuel providers, fuel cell technology companies, and government agencies that are placing fuel cell electric vehicles on the road in California. CARB's role in the partnership includes support of zero emission bus demonstrations, development of fueling codes and standards, development of infrastructure deployment, and education and outreach.

The California Stationary Fuel Cell Collaborative promotes the use of fuel cell technology in distributed generation and other stationary applications to help bring clean, efficient, reliable and sustainable power to all Californians. The collaborative promotes the deployment of fuel cell technologies as a means of reducing or eliminating air pollutants and greenhouse gas emissions; increasing energy efficiency; promoting energy reliability and independence; advancing informed public policy; initiating public demonstrations of stationary fuel cells for distributed generation; conducting key studies to further existing knowledge about fuel cell capabilities and the impact of fuel cells for distributed generation; raising public awareness about and acceptance of this technology; and helping the state of California move closer to realizing a sustainable energy future.

- **Participating in the implementation of the California Hydrogen Refueling Network.**

  CARB works to support establishment of a hydrogen refueling infrastructure to support and catalyze a rapid transition to a clean hydrogen transportation economy in California that has promise to provide a cleaner, more secure and more sustainable transportation and energy future; reduce our dependence on foreign oil; reduce greenhouse gas emissions; improve our air quality; and grow the California economy. CARB is working to establish hydrogen fueling station demonstration projects and acquire a diverse fleet of hydrogen vehicles for use in State fleets and university or airport shuttle services.

Environmental Justice Efforts

- **Implement Environmental Justice Policies.**

  CARB continues to implement the Policies and Actions for Environmental Justice adopted in 2001. This includes but is not limited to evaluating whether major programs, policies and regulations consider the impact of CARB actions on environmental justice communities.

<u>Supporting Work Elements that Meet Strategic Plan Objective 1.1: Address Climate Change And Strategic Plan Objective 1.2 Improve Air Quality (Essential Element 2).</u>

Improving Pollution Monitoring

- **Promoting the advancement of air pollution monitoring equipment technology**

CARB enhances emission monitoring and measurement methods through its research program.

Improving the scientific understanding of the relationship between air pollution and health effects by:

- **Understanding the relationship between air pollution and health effects.**

  CARB evaluates and establishes clean air targets that protect the health of all Californians, including sensitive individuals and those living in areas with environmental justice concerns, and the State's sensitive ecosystems.

- **Characterizing air pollution exposure.**

  CARB advances its understanding of human exposure to air pollution by characterizing personal exposure to pollutants from both indoor and outdoor sources. This allows CARB to focus regulatory activities on those pollutants that represent the greatest health concerns.

- **Developing an understanding of the sources of global air pollution and its impacts on the environment.**

  CARB is working to better understand the effects of changes in the global climate due to increases in carbon dioxide and other greenhouse gases. CARB also identifies the research needed to determine the impact of these changes on regional air quality and, in turn, on existing and future control strategies. In addition, a more quantitative understanding of the sources of global climate change is needed before effective mitigation methods can be determined and assessed.

Improving technical tools to assess the nature and sources of air pollution, and evaluating the effectiveness of air quality improvement strategies by:

- **Developing the atmospheric modeling capability needed to support attainment demonstrations for the federal and State ozone and particulate matter standards.**

  CARB and U.S EPA work together to plan and carry out the work necessary to ensure that the air quality modeling needed to develop plans for attaining federal and State ozone and particulate matter standards is based on the best science possible.

- **Refining the current understanding of particulate matter pollution.**

  CARB works to have a science-based understanding of the nature of the particulate matter problem, the relative contribution of pollution sources, and how the problem varies by area.

- **Developing new tools to provide air quality information to the public.**

CARB staff develops community based internet tools that provide air quality and emissions information to the public in an easy to use format.

Ensuring regulatory programs achieve the necessary emission reductions through compliance assistance paired with aggressive, firm, and fair enforcement:

- **Broadening CARB's mobile source enforcement program to address newly targeted sources and tackle emerging and expanding pathways of commerce.**

  CARB designs and implements new compliance/enforcement strategies to ensure the effective implementation of new regulations such as those that limit heavy- duty diesel vehicle idling, and reduce emissions from solid waste collection vehicles, and minimize emissions from California's shipping ports and rail yards.

- **Coordinating multimedia inspections and investigations with other Cal/EPA agencies.**

  CARB works with other law enforcement agencies (including environmental, police, customs and immigration, and the U.S. Coast Guard) to establish a strong enforcement presence statewide to address all manner of transportation violations.

- **Strengthening and fine-tuning enforcement efforts in the fuels, consumer products, cargo tanks, asbestos abatement, and other non-mobile source programs.**

  CARB is expanding its enforcement program to address several new emission areas – including incineration practices on cruise ships, locomotive idling, and fuels used by ships while in and around the ports.

- **Supporting efforts to improve local air district enforcement and permitting programs.**

  CARB provides an oversight role to the air districts by offering assistance and training to district inspection staff, providing enforcement compliance program evaluations, and additional source inspections and testing.

Please see Attachment B for specific work plan products.